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A Study on Environmental Effect in the Process of Economic Transition from the Perspective of Managerial Mechanism of Enterprise-A Case of Shandong Province

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Abstract

Since the reform and opening, the economic system of Shandong Province is transforming gradually from a planned economy to a market economy in the process of economic transition, besides, the enterprise management mechanism is also undergoing profound changes, particularly in the enterprise business system of ownership, firm size and corporate social responsibility. The change of business operation mode produces different environmental effects, This paper analyzes the environmental effects in the process of economic transition from the perspective of enterprise management mechanism, while compares the different law of environmental effects in the enterprises of different scale and different ownership, and analyzes the role that corporate social responsibility played in sustainable development in depth, which has an important reference for Shandong to establish a sustainable development mechanism and build an ecological province.

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Key words: economic transition; management mechanism; environmental effects; Shandong Province

There are many researches on economic transition conducted by domestic and international scholars, most conventional economists considered the economy transition to be a process of a planned economy to a market economy^[1-3]. While the author hold that the content is very rich in economic transition, which not only refers to the allocation of resources that plays an important role in the system transformation, but

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also include the transition of economic development mode, development factors as well as the development path. The current research scale of economic transition is mostly conducted in national or other macro-scale, while the provincial units of meso-scale analysis in the meso-scale is less. The research content is mostly concentrated on the traditional economic areas, such as the reconstruction of state-owned enterprises and the impact on urban residents consumption behavior in the process of economic transition^[4]. There are fewer studies on the environmental quality change in the process of economic transition, however, the economic transition changes the mode of enterprise operation and government management, and greatly influences environmental decision-making of enterprises and the government's environmental management, leading to changes in environmental quality. There are many studies on environmental effect in the process of economic transition, such as the study on the relationship between China's economic transition and environmental quality from the qualitative and quantitative aspects (Li Guozhu & Ma Shucan)^[5]; the study on environmental effect in the process of China's economic transition in qualitative point of view (Hou Weili)^[6]; the study on Yangtze River Delta region's environmental effects in the process of economic transition from the qualitative and quantitative aspects (Ji bin & Shen Hongjun) and so on^[7]. In summary, it is necessary to study the environmental effect in the process of economic transition in mesoscale. This paper mainly studies on environmental effect in the process of economic transition from the perspective of managerial mechanism of enterprise in the case of Shandong Province.

1. Process of enterprise operating mechanism transformation in Shandong

The central link in economic restructuring is the enterprise reform, which is the key to change their management mechanism. Enterprise operating mechanism is a general term that enterprises in the production process of the linkages between the elements, function and regulation of approach. Its function is to achieve business goals, make rapid response to various factors which affect the production and management activities, regulate and restrict the behavior of enterprises and make it in accordance with the orderly operation of a certain way. In the socialist market economy, enterprise management mechanism includes the contents of incentive and restraint mechanisms, development mechanisms, competition and risk mechanism in general^[8]. The government functions must be transformed in order to transform the business management, with emphasis on the implementation of the autonomy of enterprises, and the core is to make enterprises open to the market. The transformation of enterprises is bound to have a huge impact on the resource allocation and utilization, and change the environmental quality as a result.

Since reform and opening, the enterprise operating mechanism transformation of Shandong Province is broadly divided into three stages: The first stage (1978-1991) is a stage that tried to a variety of management methods with dual phase system. In this period, the use of joint ventures, cooperative ventures and wholly foreign-owned enterprise operating a variety of forms is advocated, and advocates the expansion of enterprise autonomy as well as the implementation of administrative separate enterprises too; The second stage (1992-2002) is a stage of state-owned enterprises reform and non-public economy establish. The reform of state-owned assets management system, the adherence to the separation of government and enterprises, the implementation of separation of management and ownership, the implementation of the shareholding system, the development of a mixed economy are the main tasks of this stage; The third stage (2003- present) is a stage that establishes modern property rights system and the

enterprise system, and establish a modern property rights system with clear ownership, clear responsibilities, strict protection and smooth circulation gradually.

2. The change of corporate structure in enterprise operating mechanism transformation

Throughout the 30-year history of the transformation of enterprises, enterprise institutional environment has undergone tremendous changes. The market plays an important role in the business; Corporate ownership structure is no longer a single public ownership, while public ownership is dominant and diverse forms of ownership develop; Accompanied by changes in corporate ownership structure, size of the business also presents some new features.

2.1 Changes in the structure of enterprise ownership

The change of ownership includes the changes in ownership structure and forms of ownership. Ownership structure is the economic mechanism of the foundation. As the reality of China's economic reform is concerned, all of the important changes in the economic system can find its interpretation in the change of institutional ownership^[9]. Since the reform and opening up, the change of China's ownership structure can be characterized by the sustained decline in the proportion of public sector and the sustained rise in the corresponding proportion of non-state-owned economy. It is also true to Shandong Province. The proportion of output value of state-owned enterprises and collective enterprises declined gradually in Shandong Province during 1978 -2008. While the proportion of other economic increased gradually, including joint-stock economy and foreign-invested economy. In 2008, as different parts of the industrial added value, the proportion of the state-owned economy, collective economy, joint-stock economy, foreign investment respectively accounting for 6.65%, 5.58%, 66.59%, 21.18%. It can be seen that the economic structure of Shandong Province changed greatly in accord with the changes in the economic system. The proportion of the state-owned economy and the collective economy reduced, while the proportion of joint-stock economy and foreign investment economy increased more.

2.2 The change of the enterprise-scale structure

Traditionally, enterprise scale usually refers to a company owned by the size and scope of the factors of production. With the accelerated speed of the industry evolution, technological progress and organizational structure, the firm size is usually be reflected and compared by the enterprise output indicators, enterprise-scale indicators usually conclude output, revenue, total assets and number of employees, etc^[10]. The growth of firm size, including two meanings, on the one hand refers to the spatial allocation of a country, region or industry groups at a specific time; on the other hand refers to the dynamic evolution of firm size. After the reform and opening up, SMEs in the proportion of total number of enterprises has increased, while the proportion of large enterprises has been declining when the reform coming to a deepen stage, and then gradually stabilized. In the 21st century, Shandong Province gradually expand the scale of small medium and large enterprises, the scale of large, medium and small enterprises in 2008 were: 5,250,730,000 yuan, 496,890,000 yuan, 71,390,000 yuan, respectively, while compared with the scale of 1999, it is respectively 16 times, 8 times, 3 times larger. The proportion of large enterprises value continue to decline, the proportion of medium-sized value is basically show a

downward trend, the proportion of small businesses value is rising, while comes to a regional stability gradually, achieving a relatively balanced state.

3. The environmental effect of the business management transformation

As an important aspect of the market economy transformation, the micro-economic unit —— enterprise, is changing its nature. Various types of non-state enterprises in the proportion of output and employment increased year by year, which have a great impact on the environmental quality.

3.1 Changes in corporate ownership structure and in environmental quality

The relationship between corporate ownership and pollutant emission intensity has still not very clear, scholars didn't reach the same conclusion. Some scholars, such as Debarbrata Talukdar and Craig M.Meisner, argued that the nature of enterprise property rights is related to CO₂ emissions. The higher the rate of privatization, the less environmental degradation. And if the well-functioning domestic capital markets and developed economies take greater participate in the private sector development, the environmental performance of enterprises can be improved. The World Bank scholars, such as Summits Dasgupta、Wang hua、David Wheeler (1997) ,argued that the SO₂ marginal cost reduction of state-owned enterprises is 5.55 times larger than the non-state enterprises. The direction of state-owned enterprises to non-ownership reform is conducive to reducing industrial pollution, at least to significantly reduce the cost of pollution reduction^[11]. According to China National Environmental Monitoring Centre's survey on 3000 key pollution sources enterprises and the Chinese Academy's survey on more than 4,000 companies, the statistics showed that collective enterprises, state-owned enterprises, foreign funded enterprises and joint-stock enterprises of other types of enterprises showed a decreasing trend in emissions intensity.

According to the data collected from 589 enterprises in 2008 Statistical Yearbook of Shandong Province, that collective enterprises, private enterprises, joint-stock enterprises, foreign-funded enterprises and other enterprises of different economic types have different degree of resource use per unit of output, emissions per unit of output, environmental management, processing power, etc.,table 1. In terms of resource use per unit of output, foreign-funded enterprises and collective enterprises reach the relatively high level of intensive use of resources, while state-owned enterprises, private enterprises and joint-stock enterprises use relatively poor. As to the utilization of water resources, joint-stock enterprises use 46.45 million tons of water per ten thousand yuan, far above the 3.059 million tons of foreign enterprises; the private sector use of coal was 34,600 tons, much higher than the foreign-funded enterprises 2,500 tons. As to the repeated use rate of industrial water, the level in state-owned enterprises and joint-stock enterprises reached 93%, while collective and foreign enterprises are only 63%. As to the emissions per unit output value, foreign-funded enterprises and collective enterprises have less emissions per unit of output, while state-owned enterprises, private enterprises and joint-stock enterprises emissions more. Wastewater, COD, waste gas discharged at per unit of output in private enterprise are respectively 4.88 times, 7.20 times, 6.76 times larger than that in foreign enterprise, the difference was huge. In environmental management, there are most environmental managers in private enterprises, up to 9.4 person per hundred million yuan, compared to 1.5 person in state-owned enterprises, joint-stock enterprises and foreign-funded enterprises, and 2.6 person in collective enterprises. As to the ability to

comprehensive utilization of waste products and capacity of pollutants, there are more obvious advantages in state-owned enterprises, while foreign-funded is weaker in this aspect, and other indicators are not obvious.

Table1. Environmental effects of different ownership enterprises

Types \ Company Property		State-owned	Collective	Privately-owned	Joint-stock	Foreign-funded
Resource use per unit output value	water	**	****	***	*	*****
	coal	***	****	*	*	*****
	the repeated use rate of water	*****	**	***	*****	**
Emissions per unit output value	Wastewater discharge	***	****	*	*	*****
	COD emission	***	****	*	*	*****
	toxic gas emission	**	****	*	*	*****
	SO ² emission	**	****	***	*	*****
	Industrial solid waste generation	*	***	*****	*	*****
Environmental Management	full-time environmental protection person per unit output value	*	****	*****	*	*
Processing ability	Comprehensive utilization of waste products per unit output value	****	**	*****	***	*
	Facilities for Treatment of Wastewater	*****	**	***	*****	*
	Desulfurization capacity	*****	**	*****	***	*
	Industrial Wastewater Discharge Standards	****	*****	*	*****	**
	Comprehensive utilization of industrial solid waste	**	****	*****	*	***

Remarks: The number of "*" represents the degree from the superior to the inferior

Through the above analysis, we can conclude that: (1) The foreign-funded enterprises do better in "resource use per unit output value" and "emissions per unit output value", but have a poor performance in the environmental management and the pollution processing ability. (2) In privately-owned enterprises, the emissions are more. As to resource use, particularly intensive water use is not enough, the pollution processing ability is general. (3) Emissions in state-owned enterprises is second only to the privately-owned enterprises. Environmental management level in state-owned enterprises is low, but the pollution processing ability the strongest. (4) Collective enterprises do better in "resource use per unit output value" and "emissions per unit output value", showing good degree of resource consumption and environmental effects. (5) Joint-stock enterprises are similar to state-owned enterprises.

3.2 The relationship between the size and structure of enterprises and changes in environmental quality

Companies of different sizes in the economic competition based on a market economy, tend to show different environmental orientation. In general, large enterprises are superior to the SME in pollutant emissions and resource consumption, while medium enterprises are superior to the small ones. Through the comparison and analysis of resource use, emissions of pollutants and environmental management capacity in 5028 enterprises of all sizes, we can draw a clear conclusion that: large enterprises have obvious advantages in the resource use, pollutant emissions and pollutant treatment capacity, followed by medium and small enterprises is worst. Table 2. There are three main reasons for this phenomenon: firstly,

since the large sewage volume, large enterprises is likely to draw more attentions from the environmental management departments, and are subject to more stringent environmental supervision and management, thus large enterprises will do better in the pollution control; secondly, compared with the large-scale production, SMEs' technology level is often low due to low quality of the managers and workers, resulting in excessive consumption of resources and low environmental pollution levels; thirdly, end-treatment is still the major current means of treatment to the pollution prevention and control, large enterprises generally rely on its solid financial to establish a comprehensive pollution treatment facilities, while SMEs are difficult to install such high levels of pollution control facilities because of financial problems.

Table 2. Environmental effects of different scale enterprises

Types	Company Property	Large	Medium	Small
Resource use per unit output value	Water	*	**	***
	Coal	***	**	*
	The repeated use rate of water	***	**	*
Emissions per unit output value	Wastewater discharge	***	**	*
	COD emission	***	**	*
	Toxic gas emission	***	**	*
	SO ₂ emission	**	***	*
	Industrial solid waste generation	**	***	*
Environmental Management	Full-time environmental protection person per unit output value	*	**	***
Processing ability	Comprehensive utilization of waste products per unit output value	*	**	***
	Facilities for Treatment of Wastewater	***	**	*
	Desulfurization capacity	***	**	*
	Industrial Wastewater Discharge Standards	***	**	*
	Comprehensive utilization of industrial solid waste	**	***	*

Remarks: The number of “*” represents the degree from superior to the inferior

4. Conclusions

From the practice of Shandong Province, in the process of economic transition from a planned economy to a market economy, it is often accompanied by the reform of enterprise management mechanism, making tremendous changes in the enterprises ownership, enterprises size, operating mechanism etc., and this changed the business externality, particularly changed the external environmental effects. In terms of the ownership, the different types of ownership of enterprises reflect different regularity in the aspect of environmental effects, all types of enterprises has its own advantages and disadvantages in the resource use, pollutant emissions, and pollutant treatment; in terms of the enterprises scale, the large and medium enterprises have obvious advantages in resource use, pollutant emissions and pollutant treatment compared to small businesses; the concept of sustainable development

has increasingly become a consensus of corporate social responsibility, and also become an endogenous force for enterprises to improve resource utilization and reduce environmental pollution.

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